



NASA STTR 2016 Phase I Solicitation

T8.03 Detection technologies for extant or extinct life for use on robotic missions

Lead Center: ARC

One of the biggest questions that NASA is chartered to address, is "Are we alone?" NASA desires to extend the search for existing or past life on non-terrestrial bodies. Leveraging work done on extreme environment ecologies and related fields, technologies are sought that can detect and/or quantify pre-biotic compounds (amino acids, polymers) or unique molecules (organic biomarkers including certain chiral compounds, polypeptides/proteins, lipids, nucleic acid polymers) that may be evidence of living processes. These sensors or instruments should eventually be compatible with small spacecraft, rovers, or small penetrator platforms.

Efforts within this initial STTR activity are to identify potential detection approaches and system architectures that demonstrate a pathway forward for inclusion on future robotic missions. A number of research institutions have capabilities in the supporting technologies that will be critical to detecting life, including research systems deployed in extreme environments, in addition to a large number of laboratory bench techniques that may be adapted to robotic platforms. The industrial partner will be crucial not only in commercializing the technology, but developing it and maturing it towards application on robotic missions. These robotic missions may employ in-situ measurements, or may also use remote sensing methods.